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DATE: February 12, 2007

FILE NO: ROC920030127US1 (IBMK30127)

TO: MAIL STOP APPEAL-BRIEF PATENTS

Examiner Tomasz Ponikiewski

FAX NO: 1-571-273-8300

FROM: Gero G. McClellan

PAGE(S) with cover: 28

RE:

TITLE: HETEROGENEOUS MULTI-LEVEL EXTENDABLE INDEXING FOR GENERAL PURPOSE ANNOTATION SYSTEMS

U.S. SERIAL NO.:   10/600,382
FILING DATE: 6/20/03
INVENTOR(S):   Brian J. Cragun et al.
EXAMINER: Tomasz Ponikiewski
GROUP ART UNIT: 2165
CONFIRMATION NO.:   8521

Attached are the following document(s) for the above-referenced application:

Appeal Brief

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:
  Brian J. Cragun et al.

Serial No.: 10/600,382

Filed: 06/20/2003

For: HETEROGENEOUS MULTI-
  LEVEL EXTENDABLE
  INDEXING FOR GENERAL
  PURPOSE ANNOTATION
  SYSTEMS

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Confirmation No.: 8521

Group Art Unit: 2165

Examiner: Tomasz Ponikiewski

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I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450, or facsimile transmitted to the U.S. Patent and Trademark Office to fax number 571-273-8300 to the attention of Examiner Tomasz Ponikiewski, on the date shown below:
February 12, 2007
Date   Joseph Jong

Dear Sir:

APPEAL BRIEF

Applicants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2165 dated September 8, 2006, finally rejecting claims 1 and 3-27. The final rejection of claims 1 and 3-27 is appealed. This Appeal Brief is believed to be timely since it is facsimile transmitted by the due date of February 12, 2007, as set by the filing of a Notice of Appeal on December 11, 2006. Please charge the fee of $500.00 for filing this brief to Deposit Account No. 09-0465/ROC920030127US1.

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Real Party in Interest

The present application has been assigned to International Business Machines Corporation, Armonk, New York.

Related Appeals and Interferences

Applicant asserts that no other appeals or interferences are known to the Applicant, the Applicant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 1 and 3-27 are pending in the application. Claims 1-27 were originally presented in the application. Claim 2 has been canceled without prejudice. Claims 1 and 3-27 stand finally rejected as discussed below. The final rejections of claims 1 and 3-27 are appealed. The pending claims are shown in the attached Claims Appendix.

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Status of Amendments

All claim amendments prior to the Final office Action have been entered by the Examiner. Proposed amendments to claim 20 after the final rejection were also entered by the Examiner.

Summary of Claimed Subject Matter

A.   CLAIM 1 – INEDEPENDENT

Claim 1 recites a computer implemented method for indexing annotations made for a variety of different types of data objects. *See Application* Abstract, and paragraph [0011]. As claimed, the method includes creating an annotation for a first data object identified by a first plurality of identifying parameters that identify a location of the first data object. *See Application* paragraph [0040], and Figure 3, 302. The method further includes creating an index for the first data object, the index comprising one or more index values, each generated based on one or more of the first plurality of identifying parameters. *See Application* paragraph [0042], and Figure 3, 304. The method further includes creating a record containing the annotation and the index for the first data object. *See Application* paragraph [0042], and Figure 3, 306. The method further includes storing the record in a storage medium. *See Application* paragraphs [0038], and Figure 1, 138, 139, and 150.

B.   CLAIM 10 – INDEPENDENT

Claim 10 recites a computer implemented method of managing annotations for a plurality of different type data objects. *See Application* paragraph [0012], and Figures 4A and 4B. As claimed, the method includes receiving a set of parameters identifying an annotated data object, wherein the identifying parameters identify locations of the annotated data object. *See Application* paragraph [0044], and Figure 4A, 402. The method further includes selecting, based on the set of identifying parameters, a mapping from a plurality of mappings, each containing a different set of mapping functions. *See Application* paragraphs [0045] and [0048], Figure 4A, 408, 412, and 414, and Figures 5A-5C. The method further includes creating an index for the data object by mapping the identifying parameters to columns in an index table, as specified by the mapping functions of the selected mapping. *See Application,* paragraph [0047] and Figure 4A, 416.

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C.   CLAIM 15 – INDEPENDENT

Claim 15 recites a computer-readable storage medium containing a program for indexing annotations. *See Application* Abstract, paragraphs [0013], [0030] – [0031], and Figures 2A and 2B.   When executed by a processor, the program performs operations which including creating an annotation for a data object identified by a plurality of identifying parameters, wherein the identifying parameters identify a location of the data object being annotated. *See Application* paragraph [0040], and Figure 3, 302.   The operations further include creating an index for the data object, the index comprising one or more index values, each generated based on one or more of the plurality of identifying parameters. *See Application* paragraph [0042], and Figure 3, 304.   The operations further include creating an annotation record containing the annotation and the index for the data object. *See Application* paragraph [0042], and Figure 3, 306.

D.   CLAIM 20 – INDEPENDENT

Claim 20 recites a system to manage annotations for different types of data objects. *See Application,* paragraphs [0014], [0030] – [0033], and Figure 1.   As claimed, the system includes a processor. *See Application* paragraph [0034], and Figure 1, 112.   The system also includes a storage medium containing an annotation database to store annotation records containing annotations for the different type data objects. *See Application* paragraph [0038], and Figure 1, 138.   The system also includes an index table to store indexes for the different type data objects, the index having a plurality of columns, each corresponding to a different value of the indexes. *See Application* paragraph [0042], and Figure 1, 152.   The system also includes a plurality of mappings, each containing functions to map a set of identifying parameters for a different type of data object to one or more columns in the index table. *See Application* paragraph [0047], and Figure 1, 134.   The system also includes an annotation component which is executable by the processor. *See Application* paragraphs [0039]-[0040], and Figures 2A and 2B, 130.   The annotation component is configured to receive sets of parameters identifying data objects. *See Application* paragraph [0042], Figures 2A and 2B, 122, and Figure 4A, 402.   For each set of

identifying parameters received, the annotation component is configured to select one of the mappings based on the corresponding set of identifying parameters. *See Application* paragraph [0043], Figures 2A and 2B, 134, and Figure 4A, 408, 412, and 414. Additionally, for each set of identifying parameters received, the annotation component is configured to create an index for the first data object by mapping the first set of identifying parameters to columns in the index table, as specified by the mapping functions of the selected mapping. *See Application* paragraph [0047], Figures 2A and 2B, 152, and Figure 4A, 416.

Grounds of Rejection to be Reviewed on Appeal

1. Claims 1, 3-4, 10 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Vogel* (U.S. Pat. No. 6,665,681) in view of *Sommerer et al.* (U.S. Pub. No. 2004/0205514 hereinafter, "*Sommerer*").

2. Claims 5-9 are rejected under 35 U.S.C. 103(a) as being obvious over *Vogel* (US Patent 6,665,681) in view of *Sommerer*.

3. Claims 11-14 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Vogel* in view of *Sommerer* and in further view of *Nakamura et al.* (U.S. Pub. No. 2003/0074375 hereinafter, "*Nakamura*").

4. Claims 20-27 are rejected under 35 U.S.C. 102(e) as being anticipated by *Bays et al.* (U.S. Pat. No. 6,519,603 hereinafter, "*Bays*").

ARGUMENTS

Rejection of Claims 1, 3-4, 10 and 15-16 under 35 U.S.C. 103(a) as being obvious over *Vogel* in view of *Sommerer*.

The Applicable Law

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. *See* MPEP § 2142. To establish a *prima facie* case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one ordinary skill in the art to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* MPEP § 2143.

The References

Vogel is directed to generation of a taxonomy of textual documents based on phrases contained within those documents. Col. 1, lines 6-10, and col. 3, lines 6-11. *Vogel* defines a taxonomy as "a list of classifications" made up of "one or more subject matter headings with sub-headings reflecting the phrases extracted from the documents in the database." Col. 1, line 8 and lines 41-44.

In particular, *Vogel* addresses a deficiency of typical classification systems. Generation of typical subject matter classification systems is manually performed. Col. 1, lines 45-48. Such manual classification "does not use the extracted phrases from the documents in the database to create the classification system." Col. 1, lines 48-51. This results in very broad categories, which contain too many documents to permit easy review by a user of the system. Col. 1, lines 54-57.

Vogel's solution to this deficiency begins with utilization of this same method to generate a "topical library" of textual documents, which will consequently have broad categories, similar to a typical classification system. Col. 2, lines 14-17. *Vogel* then

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extracts key phrases from within the textual documents (col. 3, lines 26-30), and clusters and maps these phrases to establish the first level of the taxonomy below the topical library. Col. 2, lines 17-23. The phrases are further connected, related, and clustered, "until the taxonomy has been automatically generated." Col. 2, lines 23-26, and col. 4, lines 12-19. Therefore, the taxonomy is generated from phrases extracted from within the documents. Col. 4, lines 28-33.

Sommerer is directed to problems of speed and complexity often encountered when browsing web pages. *See* [0007]. The solution presented involves a hyperlink preview utility. One embodiment of the invention presents thumbnail images of previously viewed web pages in the navigation bar of a browser window. [0030] and Fig. 3. In order to determine which thumbnail images should be presented, *Sommerer* suggests storing a record of a user's navigation history during a browser session. *See* [0049].

The Examiner's Argument

Regarding claim 1, the Examiner argues that *Vogel* teaches <u>creating an annotation corresponding to the first data object</u> (citing *Vogel* column 4, lines 13-16) and <u>creating an index for the first data object</u> (citing *Vogel* column 2, lines 14-17) but concedes, "*Vogel* does not teach creating a record containing the reference and the index for the first data object." (Page 4 of Examiner's Final Office Action mailed September 8, 2006; hereinafter "Examiner's Final Action".) However, the Examiner states that *Sommerer* teaches this element. (*Id.*) For support, the Examiner cites paragraph [0049] of *Sommerer*.

Regarding claim 10, the Examiner argues that *Vogel* teaches <u>receiving a set of parameters identifying the annotated data</u> object (citing *Vogel* column 3, lines 26-30) and <u>selecting, based on the set of identifying parameters, a mapping</u> (citing *Vogel* column 2, lines 17-23) but concedes, "*Vogel* does not teach creating an index for the annotated data object by mapping the identifying parameters to columns in an index table, as specified by the mapping functions of the selected mapping." (Pages 5 and 6 of Examiner's Final Action.) However, the Examiner states that *Sommerer* teaches this element. (*Id.* at 5.) For support, the Examiner cites paragraph [0049] of *Sommerer*.

Regarding claim 15, the Examiner argues that *Vogel* teaches *creating an index for the first data object* (citing *Vogel* column 4, lines 13-16) and *creating an annotation record* (citing *Vogel* column 4, lines 18-19) but concedes, "*Vogel* does not teach creating an annotation for a data object identified by a plurality of identifying parameters, wherein the identifying parameters identify a location of the data object being annotated." (Pages 6 and 7 of Examiner's Final Action.) However, the Examiner states that *Sommerer* teaches this element. (*Id.* at 7.) For support, the Examiner cites paragraph [0049] of *Sommerer*.

Applicants' Response to the Examiner's Argument

The Examiner's rejections fail in at least the third criterion to establish a *prima facie* case of obviousness, in that the references fail to teach or suggest all of the claim limitations. For example, the references, even if combined as suggested in the Final Office Action, fail to teach *creating an annotation corresponding to a first data object identified by a first plurality of identifying parameters that identify a location of the first data object*, as recited in independent claims 1 and 15. Applicants respectfully submit that *Vogel* makes no mention anywhere of annotations at all. In fact, Applicants fail to find any teaching in *Vogel* that might even reasonably be construed as referring to annotations.

In responding to Applicants' arguments, the Examiner states, "As to *Vogel* not showing annotations, *Vogel* is showing a taxonomy. Taxonomy is created from extracted phrases as shown in *Vogel* column 4, lines 28-33. As such it could be interpreted as an annotation." Advisory Action, mailed December 4, 2006. Respectfully, the Examiner mischaracterizes both the meaning of the term "annotation" as commonly understood by those of ordinary skill in the art, and the meaning of "taxonomy" as clearly set forth in the specification of *Vogel*. An "annotation" is well-known to be data associated to with other data, such as a comment about a data field. Thus, an annotation provides information that is different from, but associated with underlying data. On the other hand, *Vogel* defines a taxonomy as "a list of classifications" made up of "one or more subject matter headings with sub-headings reflecting the phrases extracted from the documents in the database." Col. 1, line 8 and

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lines 41-44. The documents dealt with in *Vogel*, and likewise the extracted phrases from those documents making up the taxonomy, are restricted to text formats. *Vogel* col. 3, lines 6-11. The content of a taxonomy is nothing more than portions of the content of the document database itself, since a taxonomy is based on phrases extracted from the database. *Vogel* col. 2, lines 3-5. Thus, annotations clearly differ from taxonomies in both structure and functionality. Therefore, lacking any teaching of annotations, *Vogel* could not teach *creating an annotation corresponding to a first data object identified by a first plurality of identifying parameters that identify a location of the first data object*. Because the references fail to teach all of the claim limitations, the Examiner has failed to establish the third criteria for a *prima facie* case of obviousness.

The references likewise fail to teach *creating an index for the first data object, the index comprising one or more index values, each generated based on one or more of the first plurality of identifying parameters that identify a location of the first data object*, as recited in independent claims 1 and 15, with parallel language presented in independent claim 10. In particular, Applicants respectfully submit that the citations provided by the Examiner do not teach *creating an index*. As previously described, *Vogel* makes no mention of annotations at all. It follows, therefore, that *Vogel* does not teach an *index comprising one or more index values generated based on identifying parameters that identify a location of an annotated data object (i.e., the first data object)*. Further, the only mention of indices in *Vogel* is with reference to a topical index containing one or more broad classifications of topics. *Vogel* col. 2, lines 14-23, and col. 4, lines 4-8. There is no teaching, however, of creating this topical index *based on one or more of the first plurality of identifying parameters that identify a location of the first data object*, as recited in the claims. Therefore, separate from any teaching of annotations, *Vogel* does not teach creating an index as recited by the Applicants' claims.

Additionally, the references fail to teach *creating a record containing the annotation corresponding to the first data object and the index for the first data object*, as recited in independent Claim 1, with parallel language in independent Claim 15. The Examiner relies on *Sommerer* to teach this element, citing paragraph [0049]. Applicants respectfully submit, however, that there is no teaching in *Sommerer* of annotations, data

objects, or indices, as recited in the claims. In fact, in the Advisory Action, the Examiner concedes that the *Sommerer* does not teach indices. As previously discussed, *Vogel* neither teaches indices nor makes any reference to annotations at all. Therefore, it should be clear that the references, even when combined, do not teach creating a record containing the annotation corresponding to the first data object and the index for the first data object, since *Vogel* does not teach annotations or indices and *Sommerer* does not teach annotations, data objects, or indices.

For each of the reasons given above, independently and collectively, Applicants submit that the rejection is improper. Accordingly, Applicants respectfully request that the rejection be withdrawn and that the claims be allowed.

Rejection of Claims 5-9 under 35 U.S.C. 103(a) as being obvious over *Vogel* in view of *Sommerer*.

The Applicable Law

The requirements for a establishing a *prima facie* case of obviousness are provided above. *See* MPEP § 2142.

The References

Vogel and *Sommerer* were discussed above.

Applicants' Response to the Examiner's Rejection

Because the base claims are believed to be allowable for the reasons given with respect to *Vogel* and *Sommerer*, it follows that the dependent claims are also believed to be allowable. Accordingly, Applicants respectfully request that the rejection be withdrawn and that the claims be allowed.

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Rejection of Claims 11-14 and 17-18 under 35 U.S.C. 103(a) as being obvious over *Vogel* in view of *Sommerer* and in further view of *Nakamura*.

The Applicable Law

The requirements for a establishing a *prima facie* case of obviousness are provided above. *See* MPEP § 2142.

The References

Vogel and *Sommerer* were discussed above.

Nakamura is directed to a Text Extender Fast Path – Front End Coordinator (TEFP-FEC) system. Abstract, [0086], and Fig. 3. *Nakamura* states that such a system is "especially useful for performing high speed text searches on large amounts of data via the Internet." [0038].

Applicants' Response to the Examiner's Rejection

Because the base claims are believed to be allowable for the reasons given with respect to *Vogel* and *Sommerer*, it follows that the dependent claims are also believed to be allowable. Accordingly, Applicants respectfully request that the rejection be withdrawn and that the claims be allowed.

Rejection of Claims 20-27 under 35 U.S.C. 102(e) as being anticipated by *Bays*.

The Applicable Law

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

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The Reference

Bays is directed to methods and systems for organizing annotations to data. Col. 1, lines 8-10. The teaching of *Bays* is explicitly limited to "a system with the capability to search the annotations to locate the database material." Col. 1, lines 63-65. The teaching of Bays explicitly excludes searches "based on both the annotations and database material" (col. 1, lines 65-67) and which "search on database material to retrieve the annotations" (col. 1, line 67 – col. 2, line 1).

Bays refers to portions of the database which can be annotated as "annotatable data items". Col. 2, lines 17-18. Such annotatable data items are associated with annotations through "pointers". Col. 2, lines 30-31 and Col. 3, lines 50-53. *Bays* does not elaborate on the structure of "pointers", nor any variations of pointer characteristics with different types of associated annotations. However, *Bays* does discuss the structure of annotatable data items. Col. 2, line 47 – Col. 3, line 4. In particular, capture of annotations may be restricted to entry of information into labeled categories (col. 2, lines 52-53), which may impose constraints on datatype or values (col. 2, lines 64-66).

The Examiner's Argument

Regarding claim 20, the Examiner argues that *Bays* anticipates every element of the claim. (Page 14 of Examiner's Final Action.) Specifically, the Examiner states that *Bays* teaches "a plurality of mappings, each containing functions for mapping a set of identifying parameters for a different type of data object to one or more columns in the index table". (*Id.* at page 15.) For support, the Examiner cites column 2, lines 61-63 of *Bays*.

Applicants' Response to the Examiner's Argument

In this case, *Bays* does not disclose "each and every element as set forth in the claim." For example, regarding claim 20, *Bays* does not disclose the limitation of *a plurality of mappings, each containing functions for mapping a set of identifying parameters for a different type of data object to one or more columns in the index table*.

In particular, there is no mention of an *Index table* at all in *Bays*, as required in the claim limitation.

In the Advisory Action, the Examiner replies to Applicant's previous assertion that *Bays* does not disclose the limitation of *a plurality of mappings, each containing functions for mapping a set of identifying parameters for a different type of data object to one or more columns in the index table*:

> As to *Bays et al* not teaching index, *Bays et al.* teaches that an annotation structure could be a column in a table. Table could be used as an index. As described in previous action, the annotation structure could be more complicated and include dependency based on different types as stated in *Bays et al.* column 2, lines 61-67 and column 3, lines 1-4.

Respectfully, in this statement, the Examiner appears to confuse *Bays'* annotatable data item with an annotation. When giving examples of annotatable data items, *Bays* suggests "a column within a table". Col. 2, line 23. Alternatively, it is the annotation structure which may contain categories with possible constraints on datatypes and values. Col. 2, lines 61-67. In any case, neither *Bays'* annotatable data items nor annotations teach or suggest *a plurality of mappings, each containing functions for mapping a set of identifiable parameters for a different type of data object to one or more columns in the index table*. Certainly, neither *Bays'* annotatable data items nor annotations function as an *index table*. Moreover, *Bays* does not disclose *a plurality of mappings* as herein described. Therefore, Applicants respectfully submit that Examiner's rejection is improper and should be withdrawn.

PATENT
Atty. Dkt. No. ROC920030127US1
PS Ref. No.: IBMK30127

CONCLUSION

The Examiner errs in finding that claims 1, 3-4, 10 and 15-16 are unpatentable over *Vogel* in view of *Sommerer* under 35 U.S.C. 103(a). Withdrawal of the rejection and allowance of all claims is respectfully requested.

The Examiner errs in finding that claims 5-9 are unpatentable over *Vogel* in view of *Sommerer* under 35 U.S.C. 103(a). Withdrawal of the rejection and allowance of all claims is respectfully requested.

The Examiner errs in finding that claims 11-14 and 17-18 are unpatentable over *Vogel* in view of *Sommerer* and in further view of *Nakamura* under 35 U.S.C. 103(a). Withdrawal of the rejection and allowance of all claims is respectfully requested.

The Examiner errs in finding that claims 20-27 are anticipated by *Bays* under 35 U.S.C. 102(e). Withdrawal of the rejection and allowance of all claims is respectfully requested.

Respectfully submitted,

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CLAIMS APPENDIX

1.   (Previously Presented)   A computer implemented method comprising:

creating an annotation corresponding to a first data object identified by a first plurality of identifying parameters that identify a location of the first data object;

creating an index for the first data object, the index comprising one or more index values, each generated based on one or more of the first plurality of identifying parameters that identify a location of the first data object;

creating a record containing the annotation corresponding to the first data object and the index for the first data object; and

storing the record in a storage medium.

2.   (Canceled)

3.   (Original)   The method of claim 1, where a number of the index values is greater than a number of the first plurality of identifying parameters.

4.   (Original)   The method of claim 1, wherein creating the index for the first data object comprises:

classifying the first data object based on the first plurality of identifying parameters;

selecting a first mapping, from a plurality of mappings, based on the classification of the first data object; and

converting the first plurality of identifying parameters to one or more of the index values, as specified in the first mapping.

5.   (Previously Presented)   The method of claim 4, further comprising:

creating an annotation corresponding to a second data object identified by a second plurality of identifying parameters;

classifying the second data object based on the second plurality of identifying parameters;

selecting a second mapping, from the plurality of mappings, based on the classification of the second data object;

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creating an index for the second data object by converting the second plurality of identifying parameters to one or more index values, as specified in the second mapping; and

creating a record containing the annotation corresponding to the second data object and the index for the second data object.

6. (Original) The method of claim 5, wherein the first and second data objects are of different types.

7. (Original) The method of claim 5, wherein the first and second sets of identifying parameters comprise different numbers of parameters.

8. (Original) The method of claim 5, wherein the first object is a sub-object of the second object and the second set of identifying parameters is a subset of the first plurality of identifying parameters.

9. (Original) The method of claim 5, wherein:

the first data object is contained in a text document, wherein the first plurality of identifying parameters includes at least one or more parameters indicating a location and name of the text document; and

the second data object is contained in a database table, wherein the second plurality of identifying parameters includes at least one or more parameters indicating a location and name of the database table.

10. (Previously Presented) A computer implemented method of managing annotations for a plurality of different type data objects, comprising:

receiving a set of parameters identifying an annotated data object, wherein the identifying parameters identify locations of the annotated data object;

selecting, based on the set of identifying parameters, a mapping from a plurality of mappings, each containing a different set of mapping functions; and

creating an index for the annotated data object by mapping the identifying parameters to columns in an index table, as specified by the mapping functions of the selected mapping.

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11. (Original) The method of claim 10, wherein the mapping functions for each mapping are designed to map a different set of identifying parameters to columns in the index table.

12. (Original) The method of claim 11, wherein the mapping functions of at least one of the mappings maps more than one identifying parameter to a single column.

13. (Original) The method of claim 12, wherein the more than one identifying parameters are mapped to different sets of bytes in the single column.

14. (Previously Presented) The method of claim 10, wherein:
at least one of the mappings comprises mapping functions for mapping parameters identifying annotated data objects associated with a database to the index table columns; and
at least one of the mappings comprises mapping functions for mapping parameters identifying annotated data objects associated with a text document to the index table columns.

15. (Previously Presented) A computer-readable storage medium containing a program which, when executed by a processor, performs operations comprising:
creating an annotation for a data object identified by a plurality of identifying parameters, wherein the identifying parameters identify a location of the data object being annotated;
creating an index for the data object, the index comprising one or more index values, each generated based on one or more of the plurality of identifying parameters; and
creating an annotation record containing the annotation and the index for the data object.

16. (Original) The computer-readable medium of claim 15, wherein creating the index for the data object comprises:
selecting, based on the plurality of identifying parameters, a mapping from a plurality of mappings each containing a different set of mapping functions; and

mapping the plurality of identifying parameters to columns of an index table containing the index, according to the mapping functions of the selected mapping.

17.   (Original)   The computer-readable medium of claim 16, wherein the mapping functions for each mapping are designed to map a different set of identifying parameters to columns in the index table.

18.   (Original)   The computer-readable medium of claim 16, wherein the mapping functions of at least one of the mappings maps more than one identifying parameters to a single column.

19.   (Original)   The computer-readable medium of claim 18, wherein the more than one identifying parameters are mapped to different sets of bytes in the single column.

20.   (Previously Presented)   A system to manage annotations for different type data objects, comprising:

a processor;

a storage medium containing an annotation database to store annotation records containing annotations for the different type data objects;

an index table to store indexes for the different type data objects, the index table having a plurality of columns, each corresponding to a different value of the indexes;

a plurality of mappings, each containing functions to map a set of identifying parameters for a different type of data object to one or more columns in the index table; and

an annotation component executable by the processor and configured to receive sets of parameters identifying data objects and, for each set of identifying parameters received, select one of the mappings based on the corresponding set of identifying parameters, and create an index for the first data object by mapping the first set of identifying parameters to columns in the index table, as specified by the mapping functions of the selected mapping.

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21.   (Original)   The system of claim 20, wherein at least one of the mappings comprises mapping functions for mapping parameters identifying data objects associated with a database to the index table columns.

22.   (Original)   The system of claim 20, wherein at least one of the mappings comprises mapping functions for mapping parameters identifying data objects associated with a text document to the index table columns.

23.   (Original)   The system of claim 20, wherein the annotation component is further configured to:

receive a request for an indication of annotated data objects contained within a document identified by a set of parameters;

select one of the mappings based on the set of parameters identifying the document;

create an index for the document by mapping the set of parameters identifying the document to columns in the index table as specified by the mapping functions of the selected mapping;

search the index table for indexes matching the index created for the document;

convert each index matching the index created for the document, if any, to a set of parameters identifying a corresponding annotated data object; and

return each set of parameters identifying a corresponding data object.

24.   (Original)   The system of claim 20, wherein the annotation component is further configured to:

receive a request for an indication of annotations associated with a specified data object identified by a set of parameters;

select one of the mappings based on the set of parameters identifying the specified data object;

create an index for the specified data object by mapping the set of parameters identifying the specified data object to columns in the index table as specified by the mapping functions of the selected mapping;

retrieve annotations, if any, for the specified data object, based on the index for the specified data object; and

return the annotations.

25.   (Original)   The system of claim 24, wherein retrieving annotations for the specified object comprises:

determining if any indexes in the index table match the index created for the specified data object; and

if so, retrieving one or more annotations for the specified data object from the annotation database.

26.   (Original)   The system of claim 24, wherein the annotation component is configured to retrieve annotations for sub-objects of the specified data object.

27.   (Original)   The system of claim 20, wherein the annotation component is further configured to:

receive a request for data objects having annotations satisfying one or more specified conditions;

search the annotation database for annotations satisfying the one or more specified conditions;

obtain indexes for data objects associated with annotations, if any, satisfying the one or more specified conditions;

convert each of the indexes obtained to a set of parameters identifying the associated data object; and

return the annotations satisfying the one or more specified conditions and the sets of parameters identifying the associated data objects.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.

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